

Remarks:

Reconsideration of the application is requested.

Claims 1-5 remain in the application. Claim 1 has been amended.

In item 2 on pages 2-4 of the above-mentioned Office action, claims 1-5 have been rejected as being unpatentable over Lim et al. (US Pat. No. 5,773,878) in view of Inaba (US Pat. No. 4,258,381) under 35 U.S.C. § 103(a).

The rejection has been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found on page 13, line 7 of the specification.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

a thin quad flat package including:

a housing made of a casting or a molding compound;

an integrated circuit having a base area; and

a lead frame having an island with a base area supporting said integrated circuit, a ratio between the base area of said integrated circuit and the base area of said island being from 0.7 to 0.9 for avoiding flexure of said housing;

said integrated circuit and said island embedded in said housing so that a thickness of a housing region above said integrated circuit is substantially equal to a thickness of a housing region below said island.

Lim et al. disclose preventing a deformation of chip and lead frame (see column 3 in combination with Fig. 4A and 4B).

However, Lim et al. do not teach to prevent deformation of the housing. Fig. 4B of Lim et al. clearly shows a deformed lead frame within a housing which is not deformed at all.

Inaba only deals with the bonding strength between the chip and the island (see column 1, line 68).

In contrast, the invention of the instant application particularly concerns the problem occurring with the so-called "Thin Quad Flat Packages (TQFPs)" in which a standard lead frame and an integrated circuit are used and embedded in a casting or mounding compound housing. Due to the different expansion coefficients of the iron/nickel alloy usually used for the lead frame, of the silicon chip forming the integrated circuit, and of the molding compound of the housing, diagonal housing warpage of up to 100  $\mu\text{m}$  occurs particularly in the case of large flat housings (also called TQFPs). See page 2, lines 8-14 of the specification of the instant application.

As described in page 13, lines 7-25 (especially TABLE I) of the specification, the diagonal housing warpage can be significantly reduced through the suitable ratio of the base area of the integrated circuit to the base area of the island.

Since neither Lim et al. nor Ibana concern the specific problem of the diagonal housing warpage in TQFPs, a person skilled in the art would not be hinted or suggested toward the invention of the instant application.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-5 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section 1.136(a) in the amount of \$110.00 in accordance with Section 1.17 is enclosed herewith.

Please charge any fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

  
For Applicants

YHC:cgm

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Marked-Up Version of the Amended Claims:

Claim 1(amended). An electronic component, comprising:

a thin quad flat package including:

a housing made of a casting or a molding compound;

an integrated circuit having a base area; and

a lead frame having an island with a base area supporting said integrated circuit, a ratio between the base area of said integrated circuit and the base area of said island being from 0.7 to 0.9 for avoiding flexure of said housing;

said integrated circuit and said island embedded in said housing so that a thickness of a housing region above said integrated circuit is substantially equal to a thickness of a housing region below said island.